DEPARTMENT OF DEFENSE BLOGGERS ROUNDTABLE WITH COLONEL LORNE BLACKBOURNE, COMMANDER, U.S. ARMY INSTITUTE OF SURGICAL RESEARCH (USAISR); PAT KOCHANEK, M.D., DIRECTOR OF THE SAFAR CENTER FOR RESUSCITATION RESEARCH, UNIVERSITY OF PITTSBURGH; ARMY COLONEL DALLAS HACK, DIRECTOR AND CHAIR OF COMBAT CASUALTY CARE RESEARCH PROGRAM (CCCRP) VIA TELECONFERENCE SUBJECT: ADVANCES IN COMBAT MEDICAL CARE TIME: 10:05 A.M. EDT DATE: TUESDAY, AUGUST 17, 2010

(Note: Please refer to www.dod.mil for more information.)

TIFFANY HOLLOWAY (deputy public affairs officer, USAMRMC): All right. This is Tiffany Holloway with the United States Army Medical Research and Materiel Command Public Affairs Office. Good morning.

Q Good morning.

MS. HOLLOWAY: And thank you for joining us at the Advanced Technology Applications for Combat Casualty Care 2010 Conference. We have Colonel Dallas Hack, the director of Combat Casualty Care. We have Colonel Lorne Blackbourne, the commander of the United States Army Institute of Surgical Research. We also have Dr. Pat Kochanek from the University of Pittsburgh. He's the professor of Critical Care and the director of Safar Center.

Colonel Hack.

COL. HACK: All right, good morning, welcome.

Q Good morning.

COL. HACK: It's a pleasure to talk to you and talk about some of the things that we're learning here and the advances we're making.

ATACCC as we call it is an annual conference. This is I think our 12th year. We're doing it where we have a meeting that continues to grow. We had about 1,400 registrants this year, where leading military and civilian medical providers, researchers and our industry partners gather to discuss our recent advances in combat casualty care/trauma care.

This is really a unique conference where the users and the researchers and our industry folks can really interact. And the networking piece is at least as important as the subjects that are presented, in my opinion.

By way of background, I think it's been fairly, widely publicized in this conflict that if you are wounded by hostile action, you now have approximately a 90 percent probability of survival.

However we still need to continue to work on improving trauma care. We believe that some of these deaths could be prevented if we had better technology, better knowledge, better products and systems to take care of these severe combat wounds.

Combat casualty care is a fairly broad term. It spans the medical care of an injured troop, from basically point of wounding all the way through the various echelons of care, all the way back to where they're discharged from the hospital. So it's the entire care of a combat wound that we're considering to be in that domain.

Sometimes people forget. In the media, you know, there's so much emphasis on some of these issues like PTSD, suicide and some of those that we forget some of the causes of death: traumatic brain injury. And in particular our major cause of death is actually from hemorrhage. Obviously there are a lot of other types of wounds: orthopedic injuries, airway compromise, eye injuries and many others that are related to combat wounds. But we need -- we need to really work on all of the issues.

But in particular this morning, we've chosen to emphasize what we consider probably our two highest priorities: the area of hemorrhage, in particular the battlefield care, and then traumatic brain injury and what can be done about that.

So again I'd like to pass it over to Colonel Lorne Blackbourne, the commander of U.S. Army Institute for Surgical Research.

COL. BLACKBOURNE: Good morning.

Q Good morning.

COL. BLACKBOURNE: I would like to talk about pre-hospital battlefield care. And this is from the point of injury until a wounded warrior arrives at a deployed surgical facility.

And if you look at our medics, the training has been greatly improved based on the guidelines set forth by the Committee on Tactical Combat Casualty Care. And the equipment they carry is much improved. And the engineering is greatly improved, the tourniquet being the most valuable piece of equipment.

But if you look at the pre-hospital technology available to the combat medic, the technology has not kept pace with combat arms or in-hospital advances. A couple cases in point.

The tourniquet, it's the one thing we have on the battlefield that we have data that has saved lives. And tourniquets -- the technology for a tourniquet was available 300 years ago.

Also if you look at potentially survivable deaths on the battlefield, hemorrhage, that is bleeding to death, is the most common cause of these deaths.

And of these deaths, if you look at the anatomic injury, the bleeding is most commonly from truncal penetrating trauma, which includes injuries to the chest, abdomen and/or pelvis.

We currently do not have an answer for this injury in the pre-hospital arena. Today on the battlefield, we and our U.S. civilian counterparts attempt to avoid exsanguination -- that is, bleeding to death -- and the severe physiologic compromise due to hemorrhage, also associated with a high mortality rate, by the intravenous infusion of clear fluids: a crystalloid, basically a salt water; or a starch colloid, Hextend.

The problem with these clear fluids is that they dilute clotting factors and then the patient cannot form clot, increasing the propensity to continue bleeding. In contrast, when someone arrives at a deployed surgical hospital, we give these patients intravenous clotting factors, plasma, red blood cells and platelets, and actually avoid the clear fluids. And this with the goal of helping to form clot, then allowing successful surgery to mechanically stop, and definitively stop, the hemorrhage.

But we in combat casualty care research are very excited by the fact that on the horizon we have potential dried blood products in the pipeline, to potentially extend the ability to give clotting factors before reaching a deployed hospital, and potentially decreasing the mortality due to hemorrhage in combat.

COL. HACK: Thank you, Colonel Blackbourne.

Also, it's a pleasure to introduce Dr. Pat Kochanek, director of the Safar Center at the University of Pittsburgh.

DR. KOCHANEK: Thank you, Colonel Hack.

I've been studying traumatic brain injury now for about 25 years. And for those of you who aren't aware what -- aware of the field, it's -- traumatic brain injury is a very complex insult. One of the things that I think is very clear, that it's really not a single entity. And I have presented a slide in my presentation that shows six different CAT scans of the brain of patients, all in a coma after an acute head injury, and all scoring the same on the Glasgow Coma Scale; and yet their injuries all look totally different on their CAT scan. Another thing -- so that's obviously a big problem. How do we tackle this? Is one therapy going to work for this? Another important issue is that there's been a lot of work in severe traumatic brain injury trying to deal with the

problem, and most of that has been focused on trying to control swelling of the brain and control intracranial pressure. And there's certainly been progress on that, but where -- what we really need, we need something like a magic bullet, if you'd like to think of it -- we need a very specific neuroprotective therapy.

At this conference, and as you I'm sure are aware, one of the things that has been emerging is this issue of blast-induced traumatic brain injury. And blast-induced traumatic brain injury clearly shares a number of the pathologies with civilian traumatic brain injury, but it's becoming clear that it has some unique components -- and things such as malignant swelling in the severe blast victim.

But across the spectrum, one of the findings that appears to be being revealed is this issue of axonal damage -- axons in the brain, not necessarily the neuronal cell body or other components. The axons, the long connections in the brain, seem to be particularly vulnerable to blast. And that could be quite important to trying to develop a new therapy.

One of the other issues that I think has -- at this conference in traumatic brain injury that's emerged is this issue of mild versus severe traumatic brain injury, and that has been an area of great division in the field. And I think one of the things that we are starting to see are the people studying mild traumatic brain injury and concussion are really collaborating a lot more with the people studying severe traumatic brain injury, recognizing that these shared components are -- it's going to be necessary for us to communicate better to develop a therapy.

I -- really, at this conference and in the last couple of years, I really feel it's been a special unprecedented time in traumatic brain injury research.

You could call it a golden age in traumatic brain injury research.

So I think the blast injury problem and the problem in sports concussion that has been catching a lot of public attention now is really energizing the field to really examine this and try to come up with some specific treatments. I think that -- I'm very frank about this -- that it's -- I really believe that the United States Army has taken this challenge on in a very serious way and through major funding initiatives are developing some unique programs and strong -- both strong internal programs but, I think, remarkable linkage between the military programs and the leading civilian trauma centers.

And just as an example, I'll tell you how this has impacted our center. We've been collaborating very closely with the DARPA PREVENT Program, looking at experimental blast injury and presenting this Thursday some of our findings in that program, as I mentioned, showing this very specific pattern of axonal damage in the brain that is a little different than axonal injury in a typical civilian traumatic insult, and it is really one of the sine qua non findings of this.

What is -- emerge -- what emerged also at this meeting were some of the initial preliminary results, the initial findings of blast injury using the diffusion tensor imaging, a very sensitive magnetic resonance imaging tool, showing indeed also some preliminary evidence that there is a(n) axonal injury component in the human. And although these are just emerging findings and we need to clearly learn a lot more about them, they suggest that this may be a very important target for therapeutic development.

And the other thing I would like to mention is that in addition to diagnosis, at this meeting I've just presented a presentation that we are going to be launching a very unique program that the Army has been supportive of. And that is a program we're calling Operation Brain Trauma Therapy, which is a multi-center pre-clinical drug screening consortium with several centers across the U.S., leading traumatic brain injury centers, both in civilian and in military settings, to try to screen therapies to come up with what we think are the best therapies, rather than in the kind of individual lab, as you would say, NIH-driven single-mechanism trial -- a kind of a unique multi-center trial at the pre-clinical front to develop a therapy.

Those are my main comments.

COL. HACK: All right. Thank you, Dr. Kochanek. MS. HOLLOWAY: Okay. Thank you. We can open up for our Q&As.

OPERATOR: Okay. Lance, we can start with you, if you have a question.

Q All right. Thank you very much. Gentlemen, thank you. This is Lance Bacon from Army Times. Appreciate you taking the time today, and it sounds like you're taking some great strides there.

I'm curious to know, as you look at the traumatic brain injury and the hemorrhaging issues, what is THE most important top of the line issue that you're facing as far as getting either equipment or training to the combat medic in order to save lives? What would you -- though you've kind of given an overview, could you tell me briefly what is your priority in the immediate -- on achieving this?

COL. HACK: This is Colonel Hack. The -- our number-one priority is saving lives. And thus our number-one priority within that -- within that area is actually getting an improved product to help stem the hemorrhage.

And the one that seems to the leading candidate in that area is a -- is dried plasma. Essentially, it's a throwback to World War II days, when they gave dried plasma. We had to stop doing that in the early '60s because of the hepatitis risk. And we are going back and doing that again in a safe way, where there won't be the risk to the troops, but we will actually be able to improve their ability to clot or to be able to stop the bleeding, even when we can't put pressure on that area, as Colonel Blackbourne said, particularly truncal hemorrhage.

However, you know, there's -- because there's a real close second, in my opinion, there -- in the entire field of traumatic brain injury, there is no -- there's no way to really objectively diagnose brain injury and no way to treat it.

The -- at this point, when somebody gets exposed to a blast or gets hit on the head, all that we have is the new directive that came out to work -- to actually, when they're within 50 meters of a blast, that we -- that they have to go for evaluation.

And the issues of determining whether it's, in particular, mild TBI, where we're trying to still understand that better and how does that impact them now and in the future, repetitive mild TBI; issues like the NFL is addressing, where you -- they get repeatedly hit in the head, and do they then develop senility and so on earlier, dementia.

The acute diagnosis, though, to -- being able to get the medic to be able to make a quick determination, is this a -- is this a significant head injury, that they need to be taken off the line or they can go back out on patrol, this would be my second issue.

Q Okay.

DR. KOCHANEK: I --

COL. HACK: Dr. Kochanek, too --

DR. KOCHANEK: This is Dr. Kochanek. I'd just like to follow up on Colonel Hack's comments.

Just prior to this conference was a two-day symposium on that very specific issue that you're asking, and that is, you know, how do you diagnose traumatic brain injury in the field? And it was really an impressive conference, bringing together the world's experts.

And several things emerged of some tools to try to aid the medic. Will it be a blood test that would detect -- yes -- just like if you're having a heart attack you can detect troponin in your blood, can you detect a brain biomarker? Will it be an electrophysiological test, like a little miniature EEG that could show that your wave pattern has been acutely altered? Will it be some kind of acute physiological derangement, since the brain controls your extracerebral physiology? Or will it be some kind of mini-cognitive exam or reaction-time exam that you could assess with a device right in the field, some kind of simple device? Or do you need two of these or three of these to really pin down the diagnosis? It was a very, very important meeting and, I think, brought together people from disciplines that don't always talk. And I think some important initiatives will be generated from it.

Q Great. If I could ask one quick follow-up, when you talk about the issue with the dried plasma and you start getting coagulation and the clotting issue, while it might be premature to get a number on this, I'm curious, what kind of a difference do you think this would make

if you could quantify it in some way? What kind of a difference will it make to be able to get this introduced on the battlefield?

COL. HACK: I think -- well, first of all, it will be one tool in our -- in our -- in our armamentarium. Right now, as mentioned, the -- of the -- what we -- when we go back and analyze the deaths and we look at ones that could be salvaged, saved, and ones that couldn't, the unfortunate part is there's a significant number that are so badly injured that even if that injury occurred in the OR, shock trauma center, they couldn't be saved. And that's just a sad fact of our battle.

But we also look at the ones that could be salvaged if we had better care. And approximately 80 percent of those that we believe are potentially savable, salvageable, are from this type of hemorrhage that we're talking about. Now, are all of those automatically taken care of with this product? Definitely not. But it will be a big step forward in that area.

Q Okay. And when you say the -- 80 percent of those who could be saved, what is the number of those who could be saved, as opposed to those who, even if they were in the OR, would not?

COL./DR. : (Off mike) -- Colonel --

COL. BLACKBOURNE: Well, if you look -- we just had here at the ATACCC conference -- we just had a presentation of the died-of-wound evaluation from the armed forces medical examiner's office. And of the patients that died -- died of wounds, 50 percent had potentially survivable injuries.

Q Mm. But define "died of wounds." That's --

COL. BLACKBOURNE: That is dying after reaching a deployed military medical facility.

Q A surgical care --

COL. BLACKBOURNE: Eighty percent of those who die on the battlefield die from injuries with very large soft-tissue injuries and there's nothing you can do about them. But those who arrive with vital signs to a deployed medical facility, 50 percent are survivable, potentially survivable. And of those, 80 percent are due to hemorrhage. And of that 80 percent, 50 percent are due to truncal penetrating trauma, and 20 percent due to bleeding in the junctional area -- the axilla and groin.

And to answer your question, to really know how much of an impact is actually unknowable in the combat environment, because the only way to really know something is to research with prospective randomized trials, which we cannot do on the battlefield. So the surrogate is the civilian trauma, and at some point, hopefully, we'll do a study looking at plasma pre-hospital.

Q Great.

COL. BLACKBOURNE: Even then, you know, in military, our evacuation times are very different, you know, because we have to deal with geography, enemy, weather. And most of the penetrating truncal trauma in the United States is in urban environments, with a very short evacuation time.

Q Okay. Thank you.

OPERATOR: Before we move to the next question, do -- did anyone else join us on the call?

Q Yes, ma'am This is Alexandra Hemmerly-Brown from Army News Service.

OPERATOR: Okay.

All right. Seth? Hello?

Q Yes. Hi. This is Seth Robbins from Stars and Stripes.

I have a question about first the plasma, the dried plasma. Can you tell me how this is different than the QuikClot and the other coagulating agents that they've used in the past? COL. HACK: Well, this is a replacement for one of your normal blood components. This will go inside your veins.

Q How will they get it in? Will it --

COL. HACK: Through normal means. Through the -- either through -- probably through an IV catheter, but even through a -- probably -- and possibly even a stern (ph) or something that goes into their bone, as well.

COL. BLACKBOURNE: Intra-osseous IV infusion.

COL. HACK: Right.

COL. BLACKBOURNE: Or intravenous. You know, the IV catheters, angio-catheters. And the other agents (mentioned ?) are hemostatic agents, or external control. And they're the ones -- you know, combat gauze we deploy right now, and, you know, the main target for that is the junctional areas, where we can't put a tourniquet on but we can compress it. It helps with hemostasis.

Q So would this replace the gauze or would this just be another -- something else to use?

COL. BLACKBOURNE: No. This would be something else, because the target of an intravenous fluid is truncal trauma, so chest, abdomen and pelvis, where you cannot put a tourniquet on and you cannot manually compress it. So the patient continues to bleed until a surgeon puts a clamp on the bleeding vessel or packs off the bleeding tissue.

Q Gotcha.

COL. BLACKBOURNE: So right now, it's a total area where we have nothing other than these crystalloid and colloids, which we've had for, your know, 150 years.

Q Right.

COL. BLACKBOURNE: The only data we have is from U.S. civilian trauma centers. And these fluids have shown no impact on mortality or actually increasing mortality.

COL. HACK: Oh, that really brings a good point. The lessons that we're learning in our military trauma care are now actually being implemented in civilian trauma centers.

Q And when you say it's going to be given intravenously, will it be difficult, you know, given that most soldiers are wearing all that pack and everything, for someone on the battlefield to be able to, you know, pull everybody's -- the person's equipment off to give them the dried blood, the dried plasma? COL. BLACKBOURNE (?): Well, the target for this would be the soldier, sailor, airmen or Marine who cannot be quickly evacuated. So that means you're going to have time, you know, to take off whatever you need to to get access to the inter-osseous site or the angio- catheter site.

COL. HACK: Actually, putting fluids into the bone is something that we really are now pushing. Because of some of the difficulties you're seeing, in that chaotic environment it's fairly difficult to get an intravenous catheter, an IV catheter, in.

I mean, you understand how difficult it is in a typical emergency room now.

Q Right.

COL. HACK: Think about -- (inaudible).

But we've found that we have the devices that we have now fielded that the medics use where they can actually put that IV fluid into their -- into their breastbone, into their sternum or into their tibia, their lower leg -- or their upper arm is actually a good place, too.

Q Wow.

Q And how does that work? I'm sorry, I've never heard of that.

COL. BLACKBOURNE: It's called an interosseous catheter. And it's a very strong needle with a trocar. And it is just placed manually, with manual pressure, into the bone marrow. And as Colonel Hack says, you know, in the chaotic battlefield, and when you have to have white

light discipline, it's sometimes your only option to get intravenous access.

COL. HACK: So the bone marrow's a fairly large area.

Q (Off mike.)

COL. HACK: And you can fit that without (having to ?) see it. I mean, you can -- and you can do it by feel.

Q Gotcha.

MS. HOLLOWAY: And, Alexandra --

Q And -- go --

MS. HOLLOWAY: I'm sorry.

Q No, go ahead. I'm sorry.

MS. HOLLOWAY: Did you have a question, Alexandra Brown? Q Yes. I understand that I think the range was 50 meters within a blast zone that soldiers are being taken back to a base and checked out for TBI or any display of a concussion. And this is the second time I've heard about this, so I was just -- my first question is, is this being strongly enforced down range at all times?

COL. HACK: Well, this is -- it is a directive that was fairly reasonably issued for all forces. How often it's being done is something that we continue to go back and assess. But it is a directive. It's a command directive, it's not medical. It's the commanders; the highest level commanders have directed that this be done.

Q And although it's relatively new, have you all seen a -- I guess an increase in catching the signs and symptoms of a traumatic brain injury as a result of this checking?

COL. HACK: I think it's too soon to -- we don't have the assessment data. We are gathering that now, but we don't have the assessment data yet.

Q Okay.

And I just have a second question, if you have time. As far as the therapy, you said that there is -- as of now, there is no current treatment for TBI. Do you have any treatments on the horizon that you're going to be testing? I know you mentioned that you're going to look into what kind of therapies work. But is there any examples of treatments that may look like -- look promising?

COL. HACK: That's the perfect lead-in for Dr. Kochanek.

DR. KOCHANEK: Well, I think -- I want to be very clear that, first, I think it's a little bit incorrect. I think we need to be

careful to say there are no therapies for traumatic brain injury. If you take a patient with a severe head injury and they go into intensive care, they get a huge number of therapies.

Q Right.

DR. KOCHANEK: Most of those therapies, as I indicated, are targeting control of the pressure that builds up in the cranium, to control swelling, to optimize blood flow to the brain; and, of course, surgical interventions, if a blood clot is expanding or is large and is refected (ph), and -- or a decompressive craniectomy is done to remove the bone. So I didn't want to totally suggest that, oh, there's just no therapy for head injury. There's a -- there's a great deal of therapy.

I think what you're alluding to and what I was also indicating in my opening comments is that what we are now all looking for is something more selective than that, that is targeting damage in the neurons or the axons that, even if it were below a level where you had just obvious swelling that is visible on a CAT scan, for instance, that we had a bullet that could target that type of way-more elegant, subtle damage. And that is what is being pursued.

And now there are a number of clinical trials ongoing. For instance, progesterone is an agent that is being tested; cyclosporine, another agent that is being tested in civilian trials. I picked those two because I think those two are, from my experience, agents that are really interesting and very meritorious and worthy of testing.

Our interest on the preclinical front is to try to examine a broad range of agents and try to determine if something really is consistent across centers and move some additional therapies up.

I think the other thing I wanted to mention about this is that now, with this -- particularly from a combat-casualty care standpoint, and blast injury, and also from a mild-TBI standpoint, this idea that there can be relatively or somewhat selective damage to the axons, that therapies targeting that are very important to now begin to explore as something that we could add to our current therapy that is being delivered.

COL. HACK: Yeah, I mean, the bottom line is that, you know, we have interventions to try to prevent further damage to the -- to the brain tissue, but once the tissue's damaged, we don't really have any treatment that helps to heal that damaged brain tissue.

Q Okay.

COL. HACK: And we're working very hard on that. A lot of -- we have approximately 20 clinical trials we're funding in humans, in addition to a tremendous amount of work in the preclinical level -- as you know, all the different ones that Dr. Kochanek mentioned; we also are working with a product, Nurin (ph), which is another product -- part of a naturally occurring substance in the brain which we've found that really does help to reduce the inflammation that develops. That's really one of

the main things that happens after a brain injury, a large amount of inflammation, which can cause further damage. And so that's one of our early targets in the work we're doing.

And there are a number of other approaches: improved oxygen flow to the brain. We find that if you can get the appropriate amount of oxygen to the brain -- and there are just some tests we're doing on some blood substitute, like a perfluorocarbon, that we've found it really helps in severe traumatic brain injury, to -- the acute phase, if you can maintain the oxygen to those cells, you can prevent them from becoming as damaged as well.

Q I guess what I was more interested in was maybe the mild TBI, where, you know, I've interviewed several soldiers that have been diagnosed with this, and their difficulties are less in the -- I guess in the -- in the medical range, but more in the personality changes, short tempers, things like that, where they're really not the same person anymore.

DR. KOCHANEK (?): Right. No, I can -- we can work to talk about that. The mild TBI I think is often misunderstood. There's an event where an injury occurs.

And then there's a whole syndrome that develops after that we call post-concussive syndrome.

And what people often see is that in this post-concussive syndrome, and that's a very small number of people that actually go into that, it's maybe 3 to 5 percent of our troops, actually develop some of these other symptoms that look a lot like other medical conditions like PTSD and so on.

We are definitely doing some work in different therapies. We're actually looking at actually some of the over-the-counter drugs right now. Huperzine and acetylcysteine and some of those look very promising in this area.

But the data -- we need to actually do the data, not just anecdotal information. We need to do the studies that are actually going to tell us if this helps or not.

Q Okay.

Thank you.

MS. HOLLOWAY: Thank you.

We have about 10 more minutes.

We can go around one more time to anyone else that has any questions, starting with you, Lance.

Q Yeah, I appreciate that. I have two questions. I'll lob the easy one first. Are we -- is there a possibility of getting a

transcript, so I don't have to have a brain injury trying to figure out how to spell all these?

MS. HOLLOWAY: Yes, it should be about a day or so. I'll definitely send them out to everyone.

Q That would be awesome.

MS. HOLLOWAY: No problem.

Q Thank you. Secondarily, gentlemen, if I could, go back to the blood clotting and coagulation issue. When you talk about the dry plasma, when might the combat medic see that in their bag?

COL. HACK: I tell you, that's a question we work on every single day, to make that as soon as possible.

It is in the process, the first product. We are funding a couple of different efforts in that. The first of those products is in the initial human studies now.

It's amazing how difficult all of that can be because, for good reason, the FDA requires us to do clinical trials at several levels to -- before these types of products get approved.

So the first one that we expect to actually have the product available should be in the area of three to five years, unfortunately. We're actually -- I'm working very hard. As I said, every single day this is my number-one priority, to work on ways to shorten that. Because, for example, the Germans are using a product they produce in the NATO hospitals in Afghanistan already but -- and the French are looking at moving that forward as well. They're using -- they're using it in Africa. But we're actually being used in our -- in our operations, our NATO operations in Afghanistan. So as I said, that's our number-one priority. Right now, it looks, through our normal channels, it'll be about three to five years, and we're working very, very hard to speed that up.

But you asked a more difficult question, and that is how soon is the medic going to have that. And that -- it's one thing to use something in a hospital; it's another -- it's another thing for a medic to be able to use. And we're -- in parallel to all this other work, we're also doing the studies to show that actually administering plasma before the -- before people get to the hospital makes it -- makes an improvement in their survival.

COL. BLACKBOURNE: And I would just add we also have efforts to make it easier for the medic to be able to use this, including remote presence by a physician or physician's assistant, and we call this remote damage-control resuscitation.

So we're working at ways to get visual and audio and vital signs information back to a physician who could direct the medic to use one of these advanced blood products.

And also, we're looking at monitors to diagnose hypovolemia, or shock, before it's obvious. Right now, we use vital signs and, as you know, our warriors are in great shape and so they can maintain a blood pressure until they lose at least a third, and sometimes up to half, of their blood volume --

COL. HACK: And then it's often too late.

COL. BLACKBOURNE: And it's too late.

COL. HACK: Yes.

COL. BLACKBOURNE: Exactly. So if we have better monitors, then we're going to have more confidence that the patient is actually in shock, and then on a risk-benefit analysis we could go ahead with the medic giving these advanced products.

Q Okay, thank you very much.

MS. HOLLOWAY: And Seth, did you have an additional question?

Q Yes. All right, the one thing I'm curious about is, who is in charge of these 20 clinical trials? Is it one organization, or is it, you know, whomever has the -- whoever's the scientist, whoever's doing the trial?

COL. HACK: Okay. These are -- there is a principal investigator for each of these clinical trials. They are being funded by the Department of Defense here -- mainly out of Fort Detrick, where our command is. We have -- we have oversight over them on a -- both from a contractual standpoint and from a scientific standpoint. And they are -- they give us updates on a quarterly basis. And we interact; we go up and do site visits. So we have the broad oversight over them. And that's part of my job and my organization's job, to provide that oversight.

Q Gotcha.

MS. HOLLOWAY: Thank you, and we -- Q And specifically -- Oh.

MS. HOLLOWAY: I'm sorry. No, go ahead.

Q Thank you, guys.

Q No, I was just wondering if there was anything else, like if any of these clinical trials are close to coming to fruition. I know the progesterone is -- the NIH trial is like three to five years away. I'm wondering if anything seems like it's close.

COL. HACK: No, it's -- this is a tremendously difficult product -- problem, I mean. We think we're somewhat closer on a -- on a really -- on a truly objective test for TBI, because that's really one of our -- (inaudible) -- right now as well.

But actually therapy for TBI is mentioned -- this is a very complex problem, multiple potential causes of it. And we -- we've been working on these types of issues that -- most of the research in the past has gone on with stroke, and in the stroke field there are over 200 clinical trials of drugs that have failed. We're not taking that to be discouraging. We're taking that as a challenge to actually make a --

Q Gotcha.

COL. HACK: -- make a difference in the TBI area.

DR. KOCHANEK: And I would just follow up on that, to Colonel Hack's comments, in that -- and there are DOD-supported, even multi-center consortia to try to tackle some of these. I'm certainly familiar with the INTRuST group that's centered in San Diego that has been looking at, you know, multiple project targeting things like mild TBI or like PTSD with different therapeutic strategies. And so you have not only individual investigators but you have teams of investigators trying to develop clinical trials for these -- and testing multiple therapies right now in clinical trials for this.

COL. : There's --

DR. KOCHANEK: Well, I would just say that -- and to get back to your point and that Colonel Hack addressed also -- that, you know, these things do take some time.

But I certainly in my 25 years in traumatic brain injury have never seen a more concerted effort, to try to launch as many clinical trials and pre-clinical trials, as is going on right now.

COL. HACK: The whole field -- the whole field of research & development in traumatic brain injury has really taken a major leap forward with this interest, in -- from both the public and from the Congress, in taking care of this problem with our wounded troops.

Q Okay, thank you very much, guys.

OPERATOR: Thank you all. And before we close out, we have about three minutes left. Are there any closing remarks any of the participants would like to give today?

COL. HACK: For me, I mean, I just -- I want to thank all of the folks that have worked so hard over all these years trying to take care of our wounded troops. You know, they're giving their lives and their bodies to try and protect us. And this is the least we can do for them.

OPERATOR: Okay, anyone else?

MS. HOLLOWAY: Thank you, Ashley.

Just want to thank the bloggers. And I will get with Ashley to give you bios and photos of the speakers. And also Twitter us and Fanbook us.

OPERATOR: All right, well, you're so welcome.

And thanks again, everyone, for participating. And I'll get those transcripts to everyone as soon as they're ready. And that concludes our roundtable for today.

END.